INFECTION PREVENTION IN LONG TERM CARE
Shingles (Herpes Zoster)

Massachusetts Department of Public Health

DISEASE OVERVIEW

Shingles, or herpes zoster, is a painful blistering rash caused by reactivation of varicella zoster virus (VZV), the cause of chickenpox. Throughout this document, "shingles" will be used to refer to this reactivation of VZV. "Chickenpox" will be used to describe primary infection with VZV.

Shingles typically presents in one area, on one side of the body, in the distribution of a nerve (dermatome). There is usually no fever or other systemic symptoms. Approximately 20% of people have rash that overlaps adjacent dermatomes. Less commonly, the rash can be more widespread and affect three or more dermatomes. This condition is called disseminated zoster. This generally occurs only in people with compromised or suppressed immune systems. Disseminated zoster can be difficult to distinguish from varicella.

Pain and itching in the area of the shingles rash may persist after the lesions have resolved. The most common complication of shingles is a condition called post-herpetic neuralgia (PHN). People with PHN have pain in the areas where they had the shingles rash, even after the rash clears up. The pain from PHN may be severe and debilitating, but it usually resolves in a few weeks or months in most patients, but some people can have pain from PHN for many years. As people get older, they are more likely to develop PHN, and the pain is more likely to be severe. PHN occurs rarely among people under 40 years of age, but can occur in up to a third of untreated people who are 60 years of age and older. Shingles involving the eye may lead to serious eye complications. Very rarely, shingles can also lead to pneumonia, hearing problems, blindness, brain inflammation (encephalitis) or death. Shingles can be effectively treated with several antiviral agents.

Shingles is found worldwide and has no seasonal variation in incidence. The most striking feature of the epidemiology of shingles is the increase in incidence with increasing age. Decreasing cell-mediated immunity (CMI) associated with aging is thought to be responsible for these increased rates. Fifty percent of persons living until age 85 will develop shingles. Similarly, the loss of CMI among persons with malignancies and HIV infection is thought to be responsible for higher rates of shingles among those populations. An estimated 500,000 to 1 million episodes of zoster occur annually in the United States. The lifetime risk of zoster is estimated to be at least 32%. Approximately four percent of individuals will experience a second episode of shingles.

A vaccine to prevent shingles was approved by the FDA in May 2006. It is approved for use in persons 50 years of age and older. It is recommended for all adults sixty and over by the Advisory Committee on Immunization Practices (ACIP). It is contraindicated in persons with certain immune-compromising conditions.

Infectious Agent: Varicella-zoster virus (VZV, chickenpox virus)

Reservoir: Humans

Mode of Transmission: Shingles is caused by reactivation of varicella zoster virus (VZV), the cause of chickenpox. Anyone who has had chickenpox, and those who have been vaccinated against chickenpox and shingles, may develop shingles, especially as older adults. Exposure to shingles does not cause shingles. Exposure to shingles can cause chickenpox in susceptible individuals. The virus is transmitted to susceptible individuals (see Evidence of Immunity on page 5) by the following means:

1. From uncomplicated shingles cases when a susceptible individual has **direct contact** with lesions.

2. From disseminated shingles cases, or localized shingles cases in the immunocompromised:
   - by airborne transmission, or
   - when a susceptible individual has **direct contact** with lesions

Exposure to chickenpox does **not** cause shingles.

Incubation Period: Shingles has no incubation period; it is caused by reactivation of latent infection arising from primary chickenpox disease.

Infectious Period: Shingles is infectious until all lesions have crusted over. Infectiousness can be prolonged in immunocompromised patients.

Diagnosis and Testing: Clinical diagnosis. Laboratory confirmation is not usually indicated. However, isolation of VZV, a positive direct fluorescence antibody (DFA) test, polymerase chain reaction (PCR) test, or Tzanck smear from a clinical specimen can be helpful. **PCR is the preferred diagnostic test.** These tests are not routinely offered at the Massachusetts State Public Health Laboratory (MA SPHL).

Treatment: Analgesics and antiviral drugs can be used to treat shingles.

Vaccination: The vaccine for shingles (Zostavax) is recommended for use in people 60 years old and older to prevent shingles. The older a person is, the more severe the effects of shingles typically are, so all adults 60 years old or older should get the shingles vaccine if not contraindicated.

INFECTION CONTROL AND PREVENTION

Infection Control Measures
Implementation of, and adherence to, infection control practices are key to preventing the transmission of infectious diseases in all healthcare facilities.

Standard Precautions should be used consistently and at **all** times, by all staff, in LTCFs. Most residents can be cared for using Standard Precautions, with an emphasis on strict adherence to hand

hygiene and appropriate glove use. General infection control measures, including Standard Precautions for healthcare providers can be found at: http://www.mass.gov/eohhs/docs/dph/cdc/infection-control/general-measures.pdf.

Ensure that all healthcare workers have evidence of immunity to chickenpox at time of employment. If possible, ensure that all patients have evidence of immunity to chickenpox upon placement in the facility.

Most people born in the US prior to 1980 are considered immune to chickenpox (excluding healthcare workers), which means that many residents of LTCFs should be immune to chickenpox. When a case of shingles occurs, the focus of prevention and control is rapid identification, vaccination and possible treatment of those who are exposed and susceptible. See table on page 5 regarding evidence of immunity to chickenpox.

When a case of shingles occurs in a LTCF:

1. **Prevent exposure to the person with shingles**, as follows:

Staff

- **Staff with localized shingles** should cover lesions and should not care for susceptible patients until their skin lesions have become dry and crusted.
- **Staff with disseminated shingles and immunocompromised staff with shingles** should be excluded for the duration of their shingles.

Patients

- **Patients with localized shingles** should be cared for using standard precautions. Complete covering of lesions is recommended, if possible.
    - Only health care personnel (HCP) with evidence of immunity to varicella should care for patients who have shingles.
    - Roommates should be immune.
    - Gloves should be worn when touching infectious material and during direct patient care. Clean gloves should be used before touching mucous membranes and non-intact skin. Gloves should be changed between tasks and procedures on the same patient after contact with material that may contain a high concentration of virus. Gloves should be promptly removed after use and before touching non-contaminated items and environmental surfaces.
    - Handwashing is necessary after touching the patient **and before** contact with another patient or with non-contaminated items and environmental surfaces, whether or not gloves were used.
    - Masks, gowns, and eye protection should be worn during procedures and patient care activities likely to generate splashes of blood, bodily fluids, secretions or excretions.
    - Used patient care equipment and used linen should be handled in a manner that prevents skin and mucous membrane exposure and contamination of clothing.

- **Patients with disseminated shingles and immunocompromised patients with shingles** (either localized or disseminated) require standard plus contact precautions and **airborne isolation**, if possible. In addition to the precautions listed above, the following precautions must also be followed:
  - The room should have negative air-pressure ventilation, if possible. However, if this is not available, a private room is acceptable. If a private room is unavailable, make sure roommates are immune and all visitors are screened for evidence of immunity to chickenpox (see page 5).
  - Gloves and gowns should be worn at all times by staff.
  - Susceptible staff or visitors should not enter patient room. If unavoidable, masks should be worn. Persons immune to varicella need not wear masks.

2. **If an exposure occurs at your facility:**

a) **Identify all exposed individuals.**
- "Exposure" to uncomplicated shingles is defined as: direct contact with lesions; for example, through close patient care, touching, or hugging, or with materials used as bandages to cover lesions (e.g., gauze, gauze pads).
- "Exposure" to disseminated shingles and localized or disseminated shingles in an immunocompromised person is defined as: 1) contact with lesions (for example, through close patient care, touching, or hugging); or 2) sharing indoor airspace with the infectious person (for example, occupying the same room).

b) Identify high-risk (those at greater risk of complications from varicella) susceptible patients/staff/visitors who cannot be vaccinated among the potentially exposed. Susceptible individuals are those without evidence of immunity to chickenpox. High-risk susceptibles include those who are immunosuppressed due to underlying medical conditions (including HIV infection), treatment (including high dose steroids, chemotherapy and immunosuppressive biologic agents used to control autoimmune diseases), certain newborn infants, and susceptible pregnant women. They are not eligible for vaccination. They are at greater risk for complications from varicella and should be referred promptly to their health care provider. These high-risk susceptibles should receive VARIZIG® or IGIV (immune globulin, intravenous) as soon as possible within 10 days of exposure. Please note, bone marrow transplant recipients should be considered susceptible *regardless* of past history of disease.
- See the CDC "Managing People at Risk for Severe Varicella" for more information.
- See the CDC Pink Book Appendix A for more information about recommended intervals between administration of immune globulin preparations and measles- or varicella-containing vaccine.
- See the varicella chapter in the MDPH *Guide to Surveillance, Reporting and Control* at: http://www.mass.gov/eohhs/gov/departments/dph/programs/id/epidemiology/rdiq/public-health-cdc-surveillance-and-reporting.html

c) Identify and vaccinate other exposed susceptibles. If the varicella vaccine is given within 3

(and possibly up to 5) days of exposure to shingles, it can prevent disease. If 5 days have passed since exposure to the case, the vaccine should still be given, as it will protect against possible future exposures. Chickenpox can still occur in susceptible contacts in spite of vaccination, but vaccinating someone who is incubating chickenpox or who is immune is not harmful.

Prior to vaccinating patients: Check the package insert and see CDC's list of contraindications and precautions before administering varicella vaccine, which is a live vaccine. See also CDC's Varicella Recommendations for Specific Groups.

3. **Discharge or isolate exposed susceptible patients.** Isolate on contact precautions and airborne isolation all exposed, susceptible patients who cannot be discharged before day 8 after exposure, from day 8 through day 21 after exposure. Those who have received VARIZIG® or IGIV must remain in isolation until day 28.

4. **Conduct surveillance for chickenpox for 42 days (two incubation periods) after the last exposure to shingles**. For those who received VARIZIG® or IGIV and where immunocompromised individuals are involved, surveillance should continue for 56 days.

Evidence of Immunity to Varicella[1]
Evidence of immunity to varicella includes any of the following:
• Documentation of age-appropriate vaccination against chickenpox*; or • Laboratory evidence of immunity or laboratory confirmation of disease[2]; or • Born in the United States before 1980. **However, this should not be considered evidence of immunity for healthcare workers, pregnant women and immunocompromised persons**. Persons born outside the United States should meet one of the other criteria for varicella immunity • A healthcare provider diagnosis or verification of chickenpox[3]; or • History of shingles (herpes zoster) based on healthcare provider diagnosis.[4]

*documentation of 2 doses of varicella vaccine given at least 28 days apart for HCP

[1]Bone marrow transplant recipients should be considered susceptible *regardless* of past history of disease.

[2]Commercial assays can be used to assess disease-induced immunity, but they lack adequate sensitivity to detect vaccine-induced immunity reliably (may yield false negative results). Therefore, someone with documentation of age-appropriate vaccination and a subsequent negative titer should still be considered immune. On the other hand, someone with a history of chickenpox with a subsequent negative titer should be considered susceptible, particularly in healthcare and other high-risk settings.

[3]Self-reported history of chickenpox is acceptable for adults and college students, with review by appropriate healthcare or supervisory staff. Self- reported history for healthcare workers is not acceptable in most healthcare settings. It may be acceptable in healthcare settings where the majority of patients and staff have evidence of immunity to chickenpox.

[4]Verification of history or diagnosis of typical disease can be done by any healthcare provider (e.g., school or occupational clinic nurse, nurse practitioner, physician assistant, physician, appropriate supervisory or public health staff). For people reporting a history of, or presenting with, atypical and/or mild disease, assessment by a physician or their designee is recommended and one of the following should be sought: a) an epidemiologic link to a typical varicella case or b) laboratory confirmation, if laboratory testing was performed at the time of acute disease. When such documentation is lacking, people should not be considered as having a valid history of disease, because other diseases may mimic mild atypical varicella.

REPORTING RESPONSIBILITIES

Individual cases of shingles are ***not*** reportable in Massachusetts. Chickenpox cases are reportable in Massachusetts. For more information go to:
http://www.mass.gov/eohhs/gov/departments/dph/programs/id/epidemiology/rdiq/

Contact your local board of health or MDPH (617-983-6800) with questions.

REFERENCES

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